ATR Harmony in Enugu Ezike, a Variety of Igbo

Samuel Kayode Akinbo[1] and Nkechi Mgbodichinma Ukaegbu[2]

[1]University of Toronto, [2]University of Nigeria, Nsukka

ATR harmony and central vowels

- African languages are widely known for ATR harmony, an obligatory requirement for vowels within a specific domain to agree in the phonological feature of advanced tongue root (**[αATR]**) (Clements 1985).
- Typology research suggests that the emergence of non-low central vowels may lead to the loss of ATR harmony (Rolle et al 2017, 2020).
- However, evidence for losing ATR harmony and gaining central vowels mostly comes from standard varieties of the sampled languages.
- We fill this gap by exploring ATR harmony in Enugu Ezike, a variety of Igbo.

Enugu Ezike

- **Genetic classification**: Northern Igbo < Igboid < Niger-Congo.
- **Location**: Igbo-Eze North Local Goverment, Enugu State, Nigeria.
- **Population**: Unknown but 259,431 people live in Igbo-Eze North
- **Data source**: Language documentation at the University of Nigeria, Nsukka.

Vowel inventory and the centralization of high back vowels

- Enugu Ezike contrasts nine vowels, including the vowel [ɛ] which is missing in Standard Igbo (Ringen 1979, Zsiga 1988 1992).
- The language also has the central vowels [ɘ] and [ə] which are the reduced variants of [+ATR] and [−ATR] vowels respectively.
- As in other varieties, Enugu Ezike vowels fall into [+ATR] and [−ATR] sets.
- All the [−ATR] vowels, except for the vowel [a], have an [+ATR] counterpart.

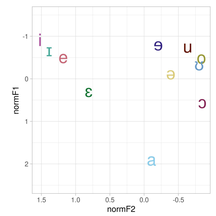

Figure 1. Normalized F1-F2 plot of vowels from 10 speakers

Table 1. Phonological features of vowels in Enugu Ezike

	i	u	e	o	ɘ	ɪ	ʊ	ɛ	ɔ	ə	a
ATR	+	+	+	+	+	−	−	−	−	−	−
High	+	+	−	−	+	+	+	−	−	+	−
Back	−	+	−	+	+	−	+	−	+	+	+
Low	−	−	−	−	−	−	−	−	−	−	+
Tense	+	+	+	+	−	−	−	−	−	−	−

- In medial and final environments, the high back vowels [u] [ʊ] of some root morphemes are reduced or centralized to the vowels [ɘ] and [ə], respectively.
- The unreduced forms of the vowels only surface in hyperarticulated speech.

(1) Reduction of high back vowels in root morphemes

ɘ∼u		ɘ∼ʊ	
òbɘ̀tə̀∼òbùtù	'neighbour'	gbɘ́ʃì∼gbúʃì	'spit'
ífə́∼ífú	'face'	àzɘ́∼àzʊ́	'back'
sɘ́∼sú	'cook'	mə̀∼mʊ̀	'back'

Basic pattern of ATR harmony

Enugu Ezike also has ATR harmony, such that all the vowels within a root morpheme are either [+ATR] and [−ATR], as illustrated in (2).

(2) Root-internal harmony

	[+ATR]		[−ATR]	
a.	ímí	'nose'	kpárí	'swear'
	òré	'burn'	ɔ́dʊ́	'pestle'
	ótùbù	'navel'	íbà	'fever'
	ótùnè	'anus'	í!lɔ́mà	'pity(n)'
	íbɔ̀bɔ̀	'fear'	ègbé	'idiot'
	útʃè	'thought'	ɔ̀gɔ̀	'in-law'
b.	èbɔ̀lè	'ram'	évə̀	'armpit'
	ɔ̀bɔ̀tɔ̀	'neighbour'	ámə̀	'penis'
	óhə̀	'slave'	ɔ́ɔ́kpɔ́	'bone'

- ATR harmony in Enugu Ezike is root-controlled and bidirectional, as illustrated by the negative prefix and imperative suffix in (3).
- All the vowels in the language, including the centralized variants of the high back vowels, function as both triggers and targets of ATR harmony.
- Root vowels do not undergo any ATR alternation, regardless of their morphosyntactic contexts or phonological positions.

(3) Root-controlled harmony

	[+ATR]		[−ATR]	
a.	é-!tʃí-!lé	'don't spank'	á-tʃì-lɛ̀	'don't rejoice'
	é-vù-lé	'don't carry'	á-gʊ̀-lɛ́	'don't count'
	é-tʃètè-lè	'don't remember'	á-hépə̀-lɛ́	'don't help'
	é-dɔ̀-lɛ́	'don't hide'	á-hɔ̀l-ɛ̀	'don't choose'
	é-tʃèzɔ̀-lè	'don't forget'	á-!gbá-!lɛ́	"don't run'
b.	é-!wɔ́-!lé	'don't despise'	á-!gɔ́sɔ́-lɛ́	'don't show'
	é-kpɔ́-!lé	'don't wear'	á-!dɔ́-!lɛ́	'don't be different'
	é-!rɔ́-!lé	'don't eat'	á-gɔ́ -!lɛ́	'don't eat'

ATR harmony and lexically conditioned allomorphy

Vowel centralization of ATR alternation is also lexically conditioned in the language.

- The vowel of the **imperative** suffix is [e] or [ə] in [+ATR] context and [ɛ] or [ə] in [−ATR] context.
- The vowel of the **negative** suffix is [e] in [+ATR] context and [ɛ] or [a] in [−ATR] context, depending on the lexical item.
- The lexical item determines whether the vowel of the alternating suffixes surfaces as centralized or the full form.
- This indicates that the mid front vowels of bound morphemes are also centralized.

(4) ATR harmony and centralization of vowels in bound morphemes

	[+ATR]				[−ATR]		
	Imperative	Negative	‘’		Imperative	Negative	
-re/-le	tʃìí-ré	é tʃì-lè	'beat'	-rɛ/lɛ	pìí-ré	á !pí-!lé	'press'
	vùú-ré	é !vú!lé	'carry'		tʃìí-ré	á !tʃí-!lé	'laugh'
-rə/-le	rìí-rə́	é !rí-!lé	'eat'	-rə/-lɛ	kù-rə́	á k^{w}ə-lɛ̀	'support'
	wò-rə́	é wō-lē	'take'		kɔ̀ɔ́-rə́	á !kɔ́-!lɛ́	'narrate'
-e/-le	sììm-é	é !sī-!lé	'cook'	-a/-a∼lɛ	sùm-á	á !sú-!lá	'pound'
	kpèm-é	é !kpé-!lé	'judge'		gə̀m-á	á !gə́-!lɛ́	'read'
-ə/le	dòn-ɔ́	é !dɔ́-!lé	'hide'		kə̀m-á	á !kə́-!lɛ́	'plant'

The status of the low central vowel [a]

The low vowel [a] can occur with both [+ATR] and [−ATR] vowels in some root morphemes, as shown in (5). This results in a root-internal disharmony.

(5) Root-internal disharmony and the vowel [a]

[+ATR]		[−ATR]	
ékpá	'scabies'	ẹ́ná	'eye'
ákpó	'palate'	àkpɔ́	'man'
ìsùsà	'rib'	èkpá	'pimple'
íkpàkpà	'liver'	ánɔ̀gə̀	'abscess'

- The low vowel [a] has no [+ATR] counterpart but is paired with the vowel [e] in ATR harmony, as illustrated with the demonstrative pronoun in (6).
- As the trigger of harmony, the vowel [a] invariable causes the vowel of the target to bear the feature [−ATR], as shown in (6b).

(6) Alternation of [a] with [e] as a target of ATR harmony

	[+ATR]		[−ATR]	
a.	òpì=nè	'this flute'	ápì=nâ:	'this scorpion'
	ùtù=nè	'this apple'	ɔ́dù=nâ:	'this tail'
	égbè=nè	'this gun'	ègbɛ́=nâ:	'this idiot'
	òsò=nè	'this next-of-kin'	ɔ̀dɔ̀=nâ:	'this rope'
b.	ógɔ̀dó=nè	'this bed'	ìkpà=nâ:	'this pocket'
	ó:kpó=nè	'this mould'	àgà=nâ:	'this cloth'

Discussion

- The language supports the view that [αATR] and [αtense] are distinct features, despite their frequent overlap in many languages (Lindau-Webb 1987).
- Enugu Ezike is comparable to other varieties of Northern Igbo in terms of its vowel inventory and vowel centralization (Nweya 2013, Akinbo et al. 2023).
- The productivity of vowel centralization in Enugu Ezike is restricted, considering that the process only applies to a subset of the lexicon.
- That the [αATR] form of an alternating morpheme can be lexically determined suggests that each form of an alternating morpheme must be lexically listed, rather than deriving vowel alternating from a single underlying form (Archangeli & Pulleyblank 2022).
- Contrary to the claim of Casali about Igbo (2003, 2008), there is no evidence to suggest that [+ATR] is dominant in Enugu Ezike (see also Akinbo et al. 2023).

Conclusion

- Enugu Ezike has a relatively complex ATR system, with vowel centralization applying to subsets of the lexicon.
- As the emergence of centralized vowels is said to correlate with the loss of ATR harmony, it is presently unclear whether we are witnessing the loss of ATR harmony or the emergence of a more complex ATR system like Tima (Tabain et al. 2024) and Kru languages in (Zogbo 2019).

References

Akinbo et al. (2023), Clements (1985), Lindau-Webb (1987), Nweya (2013), Ringen (1979), Rolle et al 2017 (2020), Tabain et al. (2024), Zogbo (2019), Zsiga (1988 1992).